



## SEQUENCE LISTING

<110> ROTIN, Daniela  
PHAM, Nam

<120> RAS Activator Nucleic Acid Molecules, Polypeptides and  
Methods of Use

<130> DWW-5001-US

<140> 09/911,826

<141> 2000-01-20

<150> 2,259,830

<151> 1999-01-20

<160> 28

<170> PatentIn Ver. 2.1

<210> 1

<211> 6568

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (63)..(4562)

<400> 1

```
cttgccatcg tgagagattg gtacatgatg tgtaaattca gttcagcata tgtttcttca 60

tt atg aaa cca cta gca atc cca gct aac cat gga gtt atg ggc cag      107
  Met Lys Pro Leu Ala Ile Pro Ala Asn His Gly Val Met Gly Gln
    1             5             10             15

cag gag aaa cac tca ctt cct gca gat ttc aca aaa ctg cat ctt act      155
  Gln Glu Lys His Ser Leu Pro Ala Asp Phe Thr Lys Leu His Leu Thr
                20             25             30

gac agt ctc cac cca cag gtg acc cac gtt tct tct agc cat tca gga      203
  Asp Ser Leu His Pro Gln Val Thr His Val Ser Ser Ser His Ser Gly
                35             40             45

tgt agt atc act agt gat tct ggg agc agc agt ctt tct gat atc tac      251
  Cys Ser Ile Thr Ser Asp Ser Gly Ser Ser Ser Leu Ser Asp Ile Tyr
                50             55             60

cag gcc aca gaa agc gag gct ggt gat atg gac ctg agt ggg ttg cca      299
  Gln Ala Thr Glu Ser Glu Ala Gly Asp Met Asp Leu Ser Gly Leu Pro
                65             70             75

gaa aca gca gtg gat tcc gaa gac gac gac gat gaa gaa gac att gag      347
  Glu Thr Ala Val Asp Ser Glu Asp Asp Asp Asp Glu Glu Asp Ile Glu
    80             85             90             95
```

aga gca tca gat cct ctg atg agc agg gac att gtg aga gac tgc cta	395
Arg Ala Ser Asp Pro Leu Met Ser Arg Asp Ile Val Arg Asp Cys Leu	
100 105 110	
gag aag gac cca att gac cgg aca gat gat gac att gaa caa ctc ttg	443
Glu Lys Asp Pro Ile Asp Arg Thr Asp Asp Asp Ile Glu Gln Leu Leu	
115 120 125	
gaa ttt atg cac cag ttg cct gct ttt gcc aat atg aca atg tca gtg	491
Glu Phe Met His Gln Leu Pro Ala Phe Ala Asn Met Thr Met Ser Val	
130 135 140	
agg cga gaa ctc tgt gct gtg atg gtg ttc gca gtg gtg gaa aga gca	539
Arg Arg Glu Leu Cys Ala Val Met Val Phe Ala Val Val Glu Arg Ala	
145 150 155	
ggg acc ata gtg tta aat gat ggt gaa gag ctg gac tcc tgg tca gtg	587
Gly Thr Ile Val Leu Asn Asp Gly Glu Glu Leu Asp Ser Trp Ser Val	
160 165 170 175	
att ctc aat gga tct gtg gaa gtg act tat cca gat gga aaa gca gaa	635
Ile Leu Asn Gly Ser Val Glu Val Thr Tyr Pro Asp Gly Lys Ala Glu	
180 185 190	
ata ctg tgc atg gga aat agt ttt ggt gtc tct cct acc atg gac aaa	683
Ile Leu Cys Met Gly Asn Ser Phe Gly Val Ser Pro Thr Met Asp Lys	
195 200 205	
gaa tac atg aaa gga gtg atg aga aca aag gtg gat gac tgc cag ttt	731
Glu Tyr Met Lys Gly Val Met Arg Thr Lys Val Asp Asp Cys Gln Phe	
210 215 220	
gtc tgc ata gcc cag caa gat tac tgc cgt att ctc aat caa gta gaa	779
Val Cys Ile Ala Gln Gln Asp Tyr Cys Arg Ile Leu Asn Gln Val Glu	
225 230 235	
aag aac atg caa aaa gtt gaa gag gaa gga gag att gtt atg gtg aaa	827
Lys Asn Met Gln Lys Val Glu Glu Glu Gly Glu Ile Val Met Val Lys	
240 245 250 255	
gaa cac cga gaa ctt gat cga act gga aca aga aag gga cac att gtc	875
Glu His Arg Glu Leu Asp Arg Thr Gly Thr Arg Lys Gly His Ile Val	
260 265 270	
atc aag ggt acc tca gaa agg tta aca atg cat ttg gtg gaa gag cat	923
Ile Lys Gly Thr Ser Glu Arg Leu Thr Met His Leu Val Glu Glu His	
275 280 285	
tca gta gta gat cca aca ttc ata gaa gac ttt ctg ttg acc tat agg	971
Ser Val Val Asp Pro Thr Phe Ile Glu Asp Phe Leu Leu Thr Tyr Arg	
290 295 300	
act ttt ctt tct agc cca atg gaa gtg ggc aaa aag tta ttg gag tgg	1019
Thr Phe Leu Ser Ser Pro Met Glu Val Gly Lys Lys Leu Leu Glu Trp	
305 310 315	

ttt aat gac ccg agc ctc agg gat aag gtt aca cgg gta gta tta ttg	1067
Phe Asn Asp Pro Ser Leu Arg Asp Lys Val Thr Arg Val Val Leu Leu	
320 325 330 335	
tggttaaatcactttgaaaggatcctgcaatgact	1115
Trp Val Asn Asn His Phe Asn Asp Phe Glu Gly Asp Pro Ala Met Thr	
340 345 350	
cga ttt tta gaa gaa ttt gaa aac aat ctg gaa aga gag aaa atg ggt	1163
Arg Phe Leu Glu Glu Phe Glu Asn Asn Leu Glu Arg Glu Lys Met Gly	
355 360 365	
gga cac cta agg ctg ttg aat atc gcg tgt gct gct aaa gca aaa aga	1211
Gly His Leu Arg Leu Leu Asn Ile Ala Cys Ala Ala Lys Ala Lys Arg	
370 375 380	
aga ttg atg acg tta aca aaa cca tcc cga gaa gct cct ttg cct ttt	1259
Arg Leu Met Thr Leu Thr Lys Pro Ser Arg Glu Ala Pro Leu Pro Phe	
385 390 395	
atc tta ctt gga ggc tct gag aag gga ttt gga atc ttt gtt gac agt	1307
Ile Leu Leu Gly Gly Ser Glu Lys Gly Phe Gly Ile Phe Val Asp Ser	
400 405 410 415	
gta gat tca ggt agc aaa gca act gaa gca ggc ttg aaa cgg ggg gat	1355
Val Asp Ser Gly Ser Lys Ala Thr Glu Ala Gly Leu Lys Arg Gly Asp	
420 425 430	
cag ata tta gaa gta aat ggc caa aac ttt gaa aac att cag ctg tca	1403
Gln Ile Leu Glu Val Asn Gly Gln Asn Phe Glu Asn Ile Gln Leu Ser	
435 440 445	
aaa gct atg gaa att ctt aga aat aac aca cat tta tct atc act gtg	1451
Lys Ala Met Glu Ile Leu Arg Asn Asn Thr His Leu Ser Ile Thr Val	
450 455 460	
aaa acc aat tta ttt gta ttt aaa gaa ctt cta aca aga ttg tca gaa	1499
Lys Thr Asn Leu Phe Val Phe Lys Glu Leu Leu Thr Arg Leu Ser Glu	
465 470 475	
gag aaa aga aat ggt gcc ccc cac ctt cct aaa att ggt gac att aaa	1547
Glu Lys Arg Asn Gly Ala Pro His Leu Pro Lys Ile Gly Asp Ile Lys	
480 485 490 495	
aag gcc agt cgc tac tcc att cca gat ctt gct gta gat gta gaa cag	1595
Lys Ala Ser Arg Tyr Ser Ile Pro Asp Leu Ala Val Asp Val Glu Gln	
500 505 510	
gtg ata gga ctt gaa aaa gtg aac aaa aaa agt aaa gcc aac act gtg	1643
Val Ile Gly Leu Glu Lys Val Asn Lys Lys Ser Lys Ala Asn Thr Val	
515 520 525	
gga gga agg aac aag ctg aaa aag ata ctc gac aag act cgg atc agt	1691
Gly Gly Arg Asn Lys Leu Lys Lys Ile Leu Asp Lys Thr Arg Ile Ser	
530 535 540	

atc ttg cca cag aaa cca tac aat gat att ggg att ggt cag tct caa Ile Leu Pro Gln Lys Pro Tyr Asn Asp Ile Gly Ile Gly Gln Ser Gln 545 550 555	1739
gat gac agc ata gta gga tta agg cag aca aag cac atc cca act gca Asp Asp Ser Ile Val Gly Leu Arg Gln Thr Lys His Ile Pro Thr Ala 560 565 570 575	1787
ttg cct gtc agt gga acc tta tca tcc agt aat cct gat tta ttg cag Leu Pro Val Ser Gly Thr Leu Ser Ser Ser Asn Pro Asp Leu Leu Gln 580 585 590	1835
tca cat cat cgc att tta gac ttc agt gct act cct gac ttg cca gat Ser His His Arg Ile Leu Asp Phe Ser Ala Thr Pro Asp Leu Pro Asp 595 600 605	1883
caa gtg cta agg gtt ttt aag gct gat cag caa agc cgc tac atc atg Gln Val Leu Arg Val Phe Lys Ala Asp Gln Gln Ser Arg Tyr Ile Met 610 615 620	1931
atc agt aag gac act aca gca aag gaa gtg gtc att cag gct atc agg Ile Ser Lys Asp Thr Thr Ala Lys Glu Val Val Ile Gln Ala Ile Arg 625 630 635	1979
gag ttt gct gtt act gcc acc ccg gat caa tat tca cta tgt gag gtc Glu Phe Ala Val Thr Ala Thr Pro Asp Gln Tyr Ser Leu Cys Glu Val 640 645 650 655	2027
tct gtc aca cct gag gga gta atc aaa caa aga aga ctt cca gat cag Ser Val Thr Pro Glu Gly Val Ile Lys Gln Arg Arg Leu Pro Asp Gln 660 665 670	2075
ctt tcc aaa ctt gca gac aga ata caa ctg agt gga agg tat tat ctg Leu Ser Lys Leu Ala Asp Arg Ile Gln Leu Ser Gly Arg Tyr Tyr Leu 675 680 685	2123
aaa aac aac atg gaa aca gaa act ctt tgt tca gat gaa gat gct cag Lys Asn Asn Met Glu Thr Glu Thr Leu Cys Ser Asp Glu Asp Ala Gln 690 695 700	2171
gag ttg ttg aga gag agt caa att tcc ctc ctt cag ctc agc act gtg Glu Leu Leu Arg Glu Ser Gln Ile Ser Leu Leu Gln Leu Ser Thr Val 705 710 715	2219
gaa gtt gca aca cag ctc tct atg cga aat ttt gaa ctc ttt cgc aac Glu Val Ala Thr Gln Leu Ser Met Arg Asn Phe Glu Leu Phe Arg Asn 720 725 730 735	2267
att gaa cct act gaa tat ata gat gat tta ttt aaa ctc aga tca aaa Ile Glu Pro Thr Glu Tyr Ile Asp Asp Leu Phe Lys Leu Arg Ser Lys 740 745 750	2315
acc agc tgt gcc aac ctg aag aga ttt gaa gaa gtc att aac cag gaa Thr Ser Cys Ala Asn Leu Lys Arg Phe Glu Glu Val Ile Asn Gln Glu 755 760 765	2363

aca ttt tgg gta gca tct gaa att ctc aga gaa aca aac cag ctg aag	2411
Thr Phe Trp Val Ala Ser Glu Ile Leu Arg Glu Thr Asn Gln Leu Lys	
770 775 780	
agg atg aag atc att aag cat ttc atc aag ata gca ctg cac tgt agg	2459
Arg Met Lys Ile Ile Lys His Phe Ile Lys Ile Ala Leu His Cys Arg	
785 790 795	
gaa tgc aag aat ttt aac tca atg ttt gca atc atc agt ggc cta aac	2507
Glu Cys Lys Asn Phe Asn Ser Met Phe Ala Ile Ile Ser Gly Leu Asn	
800 805 810 815	
ctg gca cca gtg gca aga ctg cga acg acc tgg gag aaa ctt ccc aat	2555
Leu Ala Pro Val Ala Arg Leu Arg Thr Thr Trp Glu Lys Leu Pro Asn	
820 825 830	
aaa tac gaa aaa cta ttt caa gat ctc caa gac ctg ttt gat cct tcc	2603
Lys Tyr Glu Lys Leu Phe Gln Asp Leu Gln Asp Leu Phe Asp Pro Ser	
835 840 845	
aga aac atg gca aaa tat cgt aat gtt ctc aat agt caa aat cta caa	2651
Arg Asn Met Ala Lys Tyr Arg Asn Val Leu Asn Ser Gln Asn Leu Gln	
850 855 860	
cct ccc ata atc cct cta ttc cca gtt atc aaa aag gat ctc acc ttc	2699
Pro Pro Ile Ile Pro Leu Phe Pro Val Ile Lys Lys Asp Leu Thr Phe	
865 870 875	
ctt cac gaa gga aat gac tca aaa gta gac ggg ctg gtc aat ttt gag	2747
Leu His Glu Gly Asn Asp Ser Lys Val Asp Gly Leu Val Asn Phe Glu	
880 885 890 895	
aag cta agg atg att gca aaa gaa att cgt cac gtt ggc cga atg gct	2795
Lys Leu Arg Met Ile Ala Lys Glu Ile Arg His Val Gly Arg Met Ala	
900 905 910	
tca gtg aac atg gac cct gcc ctc atg ttc agg act cgg aag aag aaa	2843
Ser Val Asn Met Asp Pro Ala Leu Met Phe Arg Thr Arg Lys Lys Lys	
915 920 925	
tgg cgg agt ttg ggg tct ctc agc cag ggt agt aca aat gca aca gtg	2891
Trp Arg Ser Leu Gly Ser Leu Ser Gln Gly Ser Thr Asn Ala Thr Val	
930 935 940	
cta gat gtt gct cag aca ggt ggt cat aaa aag cgg gta cgt cgt agt	2939
Leu Asp Val Ala Gln Thr Gly Gly His Lys Lys Arg Val Arg Arg Ser	
945 950 955	
tcc ttt ctc aat gcc aaa aag ctt tat gaa gat gcc caa atg gct cga	2987
Ser Phe Leu Asn Ala Lys Lys Leu Tyr Glu Asp Ala Gln Met Ala Arg	
960 965 970 975	
aaa gtg aag cag tac ctt tcc aat ttg gag cta gaa atg gac gag gag	3035
Lys Val Lys Gln Tyr Leu Ser Asn Leu Glu Leu Glu Met Asp Glu Glu	
980 985 990	

agt ctt cag aca tta tct ctg cag tgt gag cca gca acc aac aca ttg	3083
Ser Leu Gln Thr Leu Ser Leu Gln Cys Glu Pro Ala Thr Asn Thr Leu	
995 1000 1005	
cct aag aat cct ggt gac aaa aag cct gtc aaa tcc gag acc tct cca	3131
Pro Lys Asn Pro Gly Asp Lys Lys Pro Val Lys Ser Glu Thr Ser Pro	
1010 1015 1020	
gta gct cca agg gca ggg tca caa cag aaa gct cag tcc ctg cca cag	3179
Val Ala Pro Arg Ala Gly Ser Gln Gln Lys Ala Gln Ser Leu Pro Gln	
1025 1030 1035	
ccc cag cag cag cca cca cca gca cat aaa atc aac cag gga cta cag	3227
Pro Gln Gln Gln Pro Pro Pro Ala His Lys Ile Asn Gln Gly Leu Gln	
1040 1045 1050 1055	
gtt ccc gcc gtg tcc ctt tat cct tca cgg aag aaa gtg ccc gta aag	3275
Val Pro Ala Val Ser Leu Tyr Pro Ser Arg Lys Lys Val Pro Val Lys	
1060 1065 1070	
gat ctc cca cct ttt ggc ata aac tct cca caa gct tta aaa aaa att	3323
Asp Leu Pro Pro Phe Gly Ile Asn Ser Pro Gln Ala Leu Lys Lys Ile	
1075 1080 1085	
ctt tct ttg tct gaa gaa gga agt ttg gaa cgt cac aag aaa cag gct	3371
Leu Ser Leu Ser Glu Glu Gly Ser Leu Glu Arg His Lys Lys Gln Ala	
1090 1095 1100	
gaa gat aca ata tca aat gca tct tcg cag ctt tct tct cct cct act	3419
Glu Asp Thr Ile Ser Asn Ala Ser Ser Gln Leu Ser Ser Pro Pro Thr	
1105 1110 1115	
tct cca cag agt tct cca agg aaa ggc tat act ttg gct ccc agt ggt	3467
Ser Pro Gln Ser Ser Pro Arg Lys Gly Tyr Thr Leu Ala Pro Ser Gly	
1120 1125 1130 1135	
act gtg gat aat ttt tca gat tct ggt cac agt gaa att tct tca cga	3515
Thr Val Asp Asn Phe Ser Asp Ser Gly His Ser Glu Ile Ser Ser Arg	
1140 1145 1150	
tcc agt att gtt agc aat tcg tct ttt gac tca gtg cca gtc tca ctg	3563
Ser Ser Ile Val Ser Asn Ser Ser Phe Asp Ser Val Pro Val Ser Leu	
1155 1160 1165	
cac gat gag agg cgc cag agg cat tct gtc agc atc gtg gaa aca aac	3611
His Asp Glu Arg Arg Gln Arg His Ser Val Ser Ile Val Glu Thr Asn	
1170 1175 1180	
cta ggg atg ggc agg atg gag agg cgg acc atg att gaa cct gat cag	3659
Leu Gly Met Gly Arg Met Glu Arg Arg Thr Met Ile Glu Pro Asp Gln	
1185 1190 1195	
tat agc ttg ggg tcc tat gca cca atg tcc gag ggc cga ggc tta tat	3707
Tyr Ser Leu Gly Ser Tyr Ala Pro Met Ser Glu Gly Arg Gly Leu Tyr	
1200 1205 1210 1215	

gct aca gct aca gta att tct tct cca agc aca gag gaa ctt tcc cag	3755
Ala Thr Ala Thr Val Ile Ser Ser Pro Ser Thr Glu Glu Leu Ser Gln	
1220 1225 1230	
gat cag ggg gat cgc gcg tca ctt gat gct gct gac agt ggc cgt ggg	3803
Asp Gln Gly Asp Arg Ala Ser Leu Asp Ala Ala Asp Ser Gly Arg Gly	
1235 1240 1245	
agc tgg acg tca tgc tca agt ggc tcc cat gat aat ata cag acg atc	3851
Ser Trp Thr Ser Cys Ser Ser Gly Ser His Asp Asn Ile Gln Thr Ile	
1250 1255 1260	
cag cac cag aga agc tgg gag act ctt cca ttc ggg cat act cac ttt	3899
Gln His Gln Arg Ser Trp Glu Thr Leu Pro Phe Gly His Thr His Phe	
1265 1270 1275	
gat tat tca ggg gat cct gca ggt tta tgg gca tca agc agc cat atg	3947
Asp Tyr Ser Gly Asp Pro Ala Gly Leu Trp Ala Ser Ser Ser His Met	
1280 1285 1290 1295	
gac caa att atg ttt tct gat cat agc aca aag tat aac agg caa aat	3995
Asp Gln Ile Met Phe Ser Asp His Ser Thr Lys Tyr Asn Arg Gln Asn	
1300 1305 1310	
caa agt aga gag agc ctt gaa caa gcc cag tcc cga gca agc tgg gcg	4043
Gln Ser Arg Glu Ser Leu Glu Gln Ala Gln Ser Arg Ala Ser Trp Ala	
1315 1320 1325	
tct tcc aca ggt tac tgg gga gaa gac tca gaa ggt gac aca ggc aca	4091
Ser Ser Thr Gly Tyr Trp Gly Glu Asp Ser Glu Gly Asp Thr Gly Thr	
1330 1335 1340	
ata aag cgg agg ggt gga aag gat gtt tcc att gaa gcc gaa agc agt	4139
Ile Lys Arg Arg Gly Gly Lys Asp Val Ser Ile Glu Ala Glu Ser Ser	
1345 1350 1355	
agc cta acg tct gtg act acg gaa gaa acc aag cct gtc ccc atg cct	4187
Ser Leu Thr Ser Val Thr Thr Glu Glu Thr Lys Pro Val Pro Met Pro	
1360 1365 1370 1375	
gcc cac ata gct gtg gca tca agt act aca aag ggg ctc att gca cga	4235
Ala His Ile Ala Val Ala Ser Ser Thr Thr Lys Gly Leu Ile Ala Arg	
1380 1385 1390	
aag gag ggc agg tat cga gag ccc ccg ccc acc cct ccc ggc tac att	4283
Lys Glu Gly Arg Tyr Arg Glu Pro Pro Pro Thr Pro Pro Gly Tyr Ile	
1395 1400 1405	
gga att ccc att act gac ttt cca gaa ggg cac tcc cat cca gcc agg	4331
Gly Ile Pro Ile Thr Asp Phe Pro Glu Gly His Ser His Pro Ala Arg	
1410 1415 1420	
aaa ccg ccg gac tac aac gtg gcc ctt cag aga tcg cgg atg gtc gca	4379
Lys Pro Pro Asp Tyr Asn Val Ala Leu Gln Arg Ser Arg Met Val Ala	
1425 1430 1435	

cga tcc tcc gac aca gct ggg cct tca tcc gta cag cag cca cat ggg 4427  
Arg Ser Ser Asp Thr Ala Gly Pro Ser Ser Val Gln Gln Pro His Gly  
1440 1445 1450 1455  
  
cat ccc acc agc agc agg cct gtg aac aaa cct cag tgg cat aaa ccg 4475  
His Pro Thr Ser Ser Arg Pro Val Asn Lys Pro Gln Trp His Lys Pro  
1460 1465 1470  
  
aac gag tct gac ccg cgc ctc gcc cct tat cag tcc caa ggg ttt tcc 4523  
Asn Glu Ser Asp Pro Arg Leu Ala Pro Tyr Gln Ser Gln Gly Phe Ser  
1475 1480 1485  
  
acc gag gag gat gaa gat gaa caa gtt tct gct gtt tga ggcacagact 4572  
Thr Glu Glu Asp Glu Asp Glu Gln Val Ser Ala Val  
1490 1495 1500  
  
tttctggaag cagagcgagc cacctgaaag gagagcacia gaagacgtcc tgagcattgg 4632  
agccttgga ctcacattct gaggacggtg gaccagtttg cctccttccc tgccttaaaa 4692  
gcagcatggg gcttcttctc cccttcttcc tttccctttt gcatgtgaaa tactgtgaag 4752  
aaattgccct ggcacttttc agactttgtt gcttgaaatg cacagtgcag caatcttcga 4812  
gctcccactg ttgctgcctg ccacatcaca cagtatcatt ccaaattcca agatcatcac 4872  
aacaagatga ttcactctgg ctgcacttct caatgcctgg aaggattttt tttaatcttc 4932  
cttttagatt tcaatccagt cctagcactt gatctcattg ggataatgag aaaagctagc 4992  
cattgaacta cttggggcct ttaaccacc aaggaagaca aagaaaaaca atgaaatcct 5052  
ttgagtacag tgcttggtcca cttgtttaca atgtctctct tttaaaaaaa aaaatgagtt 5112  
taaagatttt gtccagagag taaatatata tccatttaat gattacagta ttatttttaa 5172  
ccttaagtag ggttgccagc ctggtttctg aaaaaccaa tatgccggac aggggtgtggc 5232  
cacaccaaga agacgggaag acctggcttg tgacctggc tttccatgtc cttctgggtc 5292  
caccgcgaa gtgccctatc ctggaagtat gaaatgttag ccaattaata ccaagacacc 5352  
tcactctgtc cttccccagt ggatgggggtt cttctgtaaa actgtttgca catggccagg 5412  
ggagggaaact aggacccttg tgtcctgtct gagccttatg gaggcaggac ggtgtcattg 5472  
gcggatgtgt cctgctccat tgagatggat ggcaaacccc atttttaagt tatatttctt 5532  
tgatttttgt taatttagag gtgtagggtt tgttttttgt tttttgtttt tttttaagag 5592  
aacatttat aactggatag cattgcagtg aaagcagctt gggatgttgg agctaatagcc 5652  
agctgtttat actgctcttt caagacagcc tccctttatt gaattggcat tagggaataa 5712  
acaagccttt aaacgtgata aaagatcaaa aacctgggta gacatgccag cctttgcaag 5772



gcagggttagt caccaaagac taacctccaa gtggctttat ggacgctgca tatagagaag 5832  
gcctaagtgt agcaaccatc tgctcacagc tgctattaac cctataatga ctgaaatgac 5892  
ccctccactc tatttttgtg ttgttttgca cagactccgg aaaagtgaag gctgccaatc 5952  
tgagtagtac tcaaagtga ggaactgctg gtcttggatt ttttttccat taaattcagc 6012  
tgatcatatt gatcagtaga taaacgtaaa tagcttcaaa ttttaaaagt ggaattgcag 6072  
tgttttttca ctgtatcaaa caatgtcagt gctttattta ataattctct tctgtatcat 6132  
ggcatttgct tacttgctta ttacattgtc aattatgcat ttgtaatttt acatgtaata 6192  
tgcattattt gccagtttta ttatataggc tatggacctc atgtgcatat agaaagacag 6252  
aaatctagct ctaccacaag ttgcacaaat gttatctaag cattaagtaa ttgtagaaca 6312  
taggactgct aatctcagtt cgctctgtga tgtcaagtgc agaattgaca attaactggg 6372  
gatttcctca tacttttgat actacttgta cctgtatgtc ttttagaaaag acattggtgg 6432  
agtcctgtatc ctttttgat ttttaataca ataattgtac atattggtta tatttttgtt 6492  
gaagatggta gaaatgtact atgtttatgc ttctacatcc agtttgtaca agctggaaaa 6552  
taaataaata taacat 6568

<210> 2  
<211> 1499  
<212> PRT  
<213> Homo sapiens

<400> 2  
Met Lys Pro Leu Ala Ile Pro Ala Asn His Gly Val Met Gly Gln Gln  
1 5 10 15  
Glu Lys His Ser Leu Pro Ala Asp Phe Thr Lys Leu His Leu Thr Asp  
20 25 30  
Ser Leu His Pro Gln Val Thr His Val Ser Ser Ser His Ser Gly Cys  
35 40 45  
Ser Ile Thr Ser Asp Ser Gly Ser Ser Ser Leu Ser Asp Ile Tyr Gln  
50 55 60  
Ala Thr Glu Ser Glu Ala Gly Asp Met Asp Leu Ser Gly Leu Pro Glu  
65 70 75 80  
Thr Ala Val Asp Ser Glu Asp Asp Asp Asp Glu Glu Asp Ile Glu Arg  
85 90 95  
Ala Ser Asp Pro Leu Met Ser Arg Asp Ile Val Arg Asp Cys Leu Glu  
100 105 110  
Lys Asp Pro Ile Asp Arg Thr Asp Asp Asp Ile Glu Gln Leu Leu Glu  
115 120 125  
Phe Met His Gln Leu Pro Ala Phe Ala Asn Met Thr Met Ser Val Arg  
130 135 140  
Arg Glu Leu Cys Ala Val Met Val Phe Ala Val Val Glu Arg Ala Gly  
145 150 155 160  
Thr Ile Val Leu Asn Asp Gly Glu Glu Leu Asp Ser Trp Ser Val Ile

					165					170				175	
Leu	Asn	Gly	Ser	Val	Glu	Val	Thr	Tyr	Pro	Asp	Gly	Lys	Ala	Glu	Ile
			180					185					190		
Leu	Cys	Met	Gly	Asn	Ser	Phe	Gly	Val	Ser	Pro	Thr	Met	Asp	Lys	Glu
		195					200					205			
Tyr	Met	Lys	Gly	Val	Met	Arg	Thr	Lys	Val	Asp	Asp	Cys	Gln	Phe	Val
	210					215					220				
Cys	Ile	Ala	Gln	Gln	Asp	Tyr	Cys	Arg	Ile	Leu	Asn	Gln	Val	Glu	Lys
225					230					235					240
Asn	Met	Gln	Lys	Val	Glu	Glu	Glu	Gly	Glu	Ile	Val	Met	Val	Lys	Glu
				245					250					255	
His	Arg	Glu	Leu	Asp	Arg	Thr	Gly	Thr	Arg	Lys	Gly	His	Ile	Val	Ile
			260					265					270		
Lys	Gly	Thr	Ser	Glu	Arg	Leu	Thr	Met	His	Leu	Val	Glu	Glu	His	Ser
		275					280					285			
Val	Val	Asp	Pro	Thr	Phe	Ile	Glu	Asp	Phe	Leu	Leu	Thr	Tyr	Arg	Thr
	290					295					300				
Phe	Leu	Ser	Ser	Pro	Met	Glu	Val	Gly	Lys	Lys	Leu	Leu	Glu	Trp	Phe
305					310					315					320
Asn	Asp	Pro	Ser	Leu	Arg	Asp	Lys	Val	Thr	Arg	Val	Val	Leu	Leu	Trp
				325					330					335	
Val	Asn	Asn	His	Phe	Asn	Asp	Phe	Glu	Gly	Asp	Pro	Ala	Met	Thr	Arg
			340					345					350		
Phe	Leu	Glu	Glu	Phe	Glu	Asn	Asn	Leu	Glu	Arg	Glu	Lys	Met	Gly	Gly
		355					360					365			
His	Leu	Arg	Leu	Leu	Asn	Ile	Ala	Cys	Ala	Ala	Lys	Ala	Lys	Arg	Arg
	370					375					380				
Leu	Met	Thr	Leu	Thr	Lys	Pro	Ser	Arg	Glu	Ala	Pro	Leu	Pro	Phe	Ile
385					390					395					400
Leu	Leu	Gly	Gly	Ser	Glu	Lys	Gly	Phe	Gly	Ile	Phe	Val	Asp	Ser	Val
				405					410					415	
Asp	Ser	Gly	Ser	Lys	Ala	Thr	Glu	Ala	Gly	Leu	Lys	Arg	Gly	Asp	Gln
			420					425					430		
Ile	Leu	Glu	Val	Asn	Gly	Gln	Asn	Phe	Glu	Asn	Ile	Gln	Leu	Ser	Lys
		435					440					445			
Ala	Met	Glu	Ile	Leu	Arg	Asn	Asn	Thr	His	Leu	Ser	Ile	Thr	Val	Lys
	450					455					460				
Thr	Asn	Leu	Phe	Val	Phe	Lys	Glu	Leu	Leu	Thr	Arg	Leu	Ser	Glu	Glu
465					470					475					480
Lys	Arg	Asn	Gly	Ala	Pro	His	Leu	Pro	Lys	Ile	Gly	Asp	Ile	Lys	Lys
				485					490					495	
Ala	Ser	Arg	Tyr	Ser	Ile	Pro	Asp	Leu	Ala	Val	Asp	Val	Glu	Gln	Val
			500					505					510		
Ile	Gly	Leu	Glu	Lys	Val	Asn	Lys	Ser	Lys	Ala	Asn	Thr	Val	Gly	
		515													



	1060		1065		1070										
Leu	Pro	Pro	Phe	Gly	Ile	Asn	Ser	Pro	Gln	Ala	Leu	Lys	Lys	Ile	Leu
	1075						1080				1085				
Ser	Leu	Ser	Glu	Glu	Gly	Ser	Leu	Glu	Arg	His	Lys	Lys	Gln	Ala	Glu
	1090						1095				1100				
Asp	Thr	Ile	Ser	Asn	Ala	Ser	Ser	Gln	Leu	Ser	Ser	Pro	Pro	Thr	Ser
1105				1110						1115					1120
Pro	Gln	Ser	Ser	Pro	Arg	Lys	Gly	Tyr	Thr	Leu	Ala	Pro	Ser	Gly	Thr
			1125					1130						1135	
Val	Asp	Asn	Phe	Ser	Asp	Ser	Gly	His	Ser	Glu	Ile	Ser	Ser	Arg	Ser
		1140					1145					1150			
Ser	Ile	Val	Ser	Asn	Ser	Ser	Phe	Asp	Ser	Val	Pro	Val	Ser	Leu	His
	1155						1160				1165				
Asp	Glu	Arg	Arg	Gln	Arg	His	Ser	Val	Ser	Ile	Val	Glu	Thr	Asn	Leu
1170					1175						1180				
Gly	Met	Gly	Arg	Met	Glu	Arg	Arg	Thr	Met	Ile	Glu	Pro	Asp	Gln	Tyr
1185				1190						1195					1200
Ser	Leu	Gly	Ser	Tyr	Ala	Pro	Met	Ser	Glu	Gly	Arg	Gly	Leu	Tyr	Ala
			1205						1210					1215	
Thr	Ala	Thr	Val	Ile	Ser	Ser	Pro	Ser	Thr	Glu	Glu	Leu	Ser	Gln	Asp
		1220						1225						1230	
Gln	Gly	Asp	Arg	Ala	Ser	Leu	Asp	Ala	Ala	Asp	Ser	Gly	Arg	Gly	Ser
	1235						1240					1245			
Trp	Thr	Ser	Cys	Ser	Ser	Gly	Ser	His	Asp	Asn	Ile	Gln	Thr	Ile	Gln
1250					1255						1260				
His	Gln	Arg	Ser	Trp	Glu	Thr	Leu	Pro	Phe	Gly	His	Thr	His	Phe	Asp
1265			1270						1275						1280
Tyr	Ser	Gly	Asp	Pro	Ala	Gly	Leu	Trp	Ala	Ser	Ser	Ser	His	Met	Asp
			1285						1290					1295	
Gln	Ile	Met	Phe	Ser	Asp	His	Ser	Thr	Lys	Tyr	Asn	Arg	Gln	Asn	Gln
	1300						1305						1310		
Ser	Arg	Glu	Ser	Leu	Glu	Gln	Ala	Gln	Ser	Arg	Ala	Ser	Trp	Ala	Ser
	1315					1320						1325			
Ser	Thr	Gly	Tyr	Trp	Gly	Glu	Asp	Ser	Glu	Gly	Asp	Thr	Gly	Thr	Ile
1330					1335						1340				
Lys	Arg	Arg	Gly	Gly	Lys	Asp	Val	Ser	Ile	Glu	Ala	Glu	Ser	Ser	Ser
1345				1350					1355						1360
Leu	Thr	Ser	Val	Thr	Thr	Glu	Glu	Thr	Lys	Pro	Val	Pro	Met	Pro	Ala
			1365					1370					1375		
His	Ile	Ala	Val	Ala	Ser	Ser	Thr	Thr	Lys	Gly	Leu	Ile	Ala	Arg	Lys
	1380						1385						1390		
Glu	Gly	Arg	Tyr	Arg	Glu	Pro	Pro	Thr	Pro	Pro	Gly	Tyr	Ile	Gly	
	1395					1400					1405				
Ile	Pro	Ile	Thr	Asp	Phe	Pro	Glu	Gly	His	Ser	His	Pro	Ala	Arg	Lys
1410					1415						1420				
Pro	Pro	Asp	Tyr	Asn	Val	Ala	Leu	Gln	Arg	Ser	Arg	Met	Val	Ala	Arg
1425				1430						1435				1440	
Ser	Ser	Asp	Thr	Ala	Gly	Pro	Ser	Ser	Val	Gln	Gln	Pro	His	Gly	His
			1445					1450					1455		
Pro	Thr	Ser	Ser	Arg	Pro	Val	Asn	Lys	Pro	Gln	Trp	His	Lys	Pro	Asn
	1460					1465						1470			
Glu	Ser	Asp	Pro	Arg	Leu	Ala	Pro	Tyr	Gln	Ser	Gln	Gly	Phe	Ser	Thr
	1475					1480					1485				
Glu	Glu	Asp	Glu	Asp	Glu	Gln	Val	Ser	Ala	Val					
1490					1495										

<210> 3  
 <211> 799  
 <212> DNA  
 <213> Mus musculus

<400> 3  
 actaaaggga acaaaagctg gagctccacc gcggtggcgg ccgctctaga actagtggat 60  
 cccccgggct gcaggaattc aagcgggtggg aaggatgtct ccgctgaggc agagagcagc 120  
 agcatggtgc ccgtgactac agaggaagcc aaacctgtcc ctatgcctgc ccacatagct 180  
 gtgacgccga gcactaccaa gggactcatc gcacggaagg aaggcaggta ccgggagccg 240  
 cctccacac ctccaggcta cgtgggcatc cccattgccg atttcccaga agggccttgc 300  
 caccggcca ggaagcccc ggattacaac gtggccctgc agcgggtccc catggtggca 360  
 cggccactg agggccccgc accggggccag acgcccctg cagccgcagc cagccggccg 420  
 ggcagcaagc cacagtggca caagcccagc gacgcagacc cagcctcgc gcccttccag 480  
 gcaggcttcg caggagcgga ggaggacgaa gatgaacaag tgtctgctgt ttgaggcgca 540  
 ggctccttga tccacagtga gccacccaaa ggagagcaca agaagacgtc ccaagccttg 600  
 gagccttggc acgcacatct gaggatggtg gaccagtttg cctccttccc tgccttaaag 660  
 cagcatgggg cttcttctcc cttcttctcc tcccccttg catgtgaaat actgtgaaga 720  
 aattgccctg gcactttgca gacttgttgc ttgaaatgca cagcccagca gccctgagc 780  
 tgctgcctgc cacgtcacg 799

<210> 4  
 <211> 286  
 <212> PRT  
 <213> Homo sapiens

<400> 4  
 Thr Lys Gly Asn Lys Ser Trp Ser Ser Thr Ala Val Ala Ala Ala Leu  
 1 5 10 15  
 Glu Leu Val Asp Pro Pro Gly Cys Arg Asn Ser Ser Gly Gly Lys Asp  
 20 25 30  
 Val Ser Ala Glu Ala Glu Ser Ser Ser Met Val Pro Val Thr Thr Glu  
 35 40 45  
 Glu Ala Lys Pro Val Pro Met Pro Ala His Ile Ala Val Thr Pro Ser  
 50 55 60  
 Thr Thr Lys Gly Leu Ile Ala Arg Lys Glu Gly Arg Tyr Arg Glu Pro  
 65 70 75 80  
 Pro Pro Thr Pro Pro Gly Tyr Val Gly Ile Pro Ile Ala Asp Phe Pro  
 85 90 95  
 Glu Gly Pro Cys His Pro Ala Arg Lys Pro Pro Asp Tyr Asn Val Ala  
 100 105 110  
 Leu Gln Arg Ser Arg Met Val Ala Arg Pro Thr Glu Ala Pro Ala Pro  
 115 120 125  
 Gly Gln Thr Pro Pro Ala Ala Ala Ala Ser Arg Pro Gly Ser Lys Pro  
 130 135 140

Gln Trp His Lys Pro Ser Asp Ala Asp Pro Arg Leu Ala Pro Phe Gln  
 145 150 155 160  
 Ala Ala Ser His Ser Gly Thr Ser Pro Ala Thr Gln Thr His Ala Ser  
 165 170 175  
 Arg Pro Ser Arg Gln Ala Ser Gln Glu Arg Arg Arg Thr Lys Met Asn  
 180 185 190  
 Lys Cys Leu Leu Phe Glu Ala Gln Ala Pro Xaa Ser Thr Val Ser His  
 195 200 205  
 Pro Lys Glu Ser Thr Arg Arg Arg Pro Lys Pro Trp Ser Leu Gly Thr  
 210 215 220  
 His Ile Xaa Gly Trp Trp Thr Ser Leu Pro Pro Ser Leu Pro Xaa Ser  
 225 230 235 240  
 Ser Met Gly Leu Leu Leu Pro Phe Phe Leu Ser Pro Leu His Val Lys  
 245 250 255  
 Tyr Cys Glu Glu Ile Ala Leu Ala Leu Cys Arg Leu Val Ala Xaa Asn  
 260 265 270  
 Ala Gln Pro Ser Ser Pro Xaa Ala Ala Ala Cys His Val Thr  
 275 280 285

<210> 5  
 <211> 245  
 <212> PRT  
 <213> Homo sapiens

<400> 5  
 Leu Lys Gly Thr Lys Ala Gly Ala Pro Pro Arg Trp Arg Pro Leu Xaa  
 1 5 10 15  
 Asn Xaa Trp Ile Pro Arg Ala Ala Gly Ile Gln Ala Val Gly Arg Met  
 20 25 30  
 Ser Pro Leu Arg Gln Arg Ala Ala Ala Trp Cys Pro Xaa Leu Gln Arg  
 35 40 45  
 Lys Pro Asn Leu Ser Leu Cys Leu Pro Thr Xaa Leu Xaa Arg Arg Ala  
 50 55 60  
 Leu Pro Arg Asp Ser Ser His Gly Arg Lys Ala Gly Thr Gly Ser Arg  
 65 70 75 80  
 Leu Pro His Leu Gln Ala Thr Trp Ala Ser Pro Leu Pro Ile Ser Gln  
 85 90 95  
 Lys Gly Leu Ala Thr Arg Pro Gly Ser Pro Arg Ile Thr Thr Trp Pro  
 100 105 110

Cys Ser Gly Pro Ala Trp Trp His Gly Pro Leu Arg Pro Arg His Arg  
 115 120 125  
 Ala Arg Arg Arg Leu Gln Pro Gln Pro Ala Gly Arg Arg Leu Arg Arg  
 130 135 140  
 Ser Gly Gly Gly Arg Arg Xaa Thr Ser Val Cys Cys Leu Arg Arg Arg  
 145 150 155 160  
 Leu Leu Asp Pro Gln Xaa Ala Thr Gln Arg Arg Ala Gln Glu Asp Val  
 165 170 175  
 Pro Ser Leu Gly Ala Leu Ala Arg Thr Ser Glu Asp Gly Gly Pro Val  
 180 185 190  
 Cys Leu Leu Pro Cys Leu Lys Ala Ala Trp Gly Phe Phe Ser Pro Ser  
 195 200 205  
 Ser Phe Pro Leu Cys Met Xaa Asn Thr Val Lys Lys Leu Pro Trp His  
 210 215 220  
 Phe Ala Asp Leu Leu Leu Glu Met His Ser Pro Ala Ala Pro Glu Leu  
 225 230 235 240  
 Leu Pro Ala Thr Ser  
 245

<210> 6  
 <211> 266  
 <212> PRT  
 <213> Homo sapiens

<400> 6  
 Xaa Arg Glu Gln Lys Leu Glu Leu His Arg Gly Gly Gly Arg Ser Arg  
 1 5 10 15  
 Thr Ser Gly Ser Pro Gly Leu Gln Glu Phe Lys Arg Trp Glu Gly Cys  
 20 25 30  
 Leu Arg Xaa Gly Arg Glu Gln Gln His Gly Ala Arg Asp Tyr Arg Gly  
 35 40 45  
 Ser Gln Thr Cys Pro Tyr Ala Cys Pro His Ser Cys Asp Ala Glu His  
 50 55 60  
 Tyr Gln Gly Thr His Arg Thr Glu Gly Arg Gln Val Pro Gly Ala Ala  
 65 70 75 80  
 Ser His Thr Ser Arg Leu Arg Gly His Pro His Cys Arg Phe Pro Arg  
 85 90 95  
 Arg Ala Leu Pro Pro Gly Gln Glu Ala Pro Gly Leu Gln Arg Gly Pro  
 100 105 110  
 Ala Ala Val Pro His Gly Gly Thr Ala His Xaa Gly Pro Gly Thr Gly

115		120		125
Pro Asp Ala Ala Cys Ser Arg Ser Gln Pro Ala Gly Gln Gln Ala Thr				
130		135		140
Val Ala Gln Ala Gln Arg Arg Arg Pro Thr Pro Arg Ala Leu Pro Gly				
145		150		155
Ala Gly Phe Ala Gly Ala Glu Glu Asp Glu Asp Glu Gln Val Ser Ala				
		165		170
Val Xaa Gly Ala Gly Ser Leu Ile His Ser Glu Pro Pro Lys Gly Glu				
		180		185
His Lys Lys Thr Ser Gln Ala Leu Glu Pro Trp His Ala His Leu Arg				
		195		200
Met Val Asp Gln Phe Ala Ser Phe Pro Ala Leu Lys Gln His Gly Ala				
		210		215
Ser Ser Pro Leu Leu Pro Phe Pro Phe Ala Cys Glu Ile Leu Xaa Arg				
225		230		235
Asn Cys Pro Gly Thr Leu Gln Thr Cys Cys Leu Lys Cys Thr Ala Gln				
		245		250
Gln Pro Leu Ser Cys Cys Leu Pro Arg His				
		260		265

<210> 7  
 <211> 307  
 <212> PRT  
 <213> Drosophila melanogaster

<400> 7
Ser Asn Val His Phe Leu His Leu Asn Ala Tyr Glu Leu Ala Ile Gln
1 5 10 15
Leu Thr Leu Gln Asp Phe Ala Asn Phe Arg Gln Ile Glu Ser Thr Glu
20 25 30
Tyr Val Asp Glu Leu Phe Glu Leu Arg Ser Arg Tyr Gly Val Pro Met
35 40 45
Leu Ser Lys Phe Ala Glu Leu Val Asn Arg Glu Met Phe Trp Val Val
50 55 60
Ser Glu Ile Cys Ala Glu His Asn Ile Val Arg Arg Met Lys Ile Val
65 70 75 80
Lys Gln Phe Ile Lys Ile Ala Arg His Cys Lys Glu Cys Arg Asn Phe
85 90 95
Asn Ser Met Phe Ala Ile Val Ser Gly Leu Gly His Gly Ala Val Ser
100 105 110



Arg Leu Arg Gln Thr Trp Glu Lys Leu Pro Ser Lys Tyr Gln Arg Leu  
 115 120 125  
 Phe Asn Asp Leu Gln Asp Leu Met Asp Pro Ser Arg Asn Met Ser Lys  
 130 135 140  
 Tyr Arg Gln Leu Val Ser Ala Glu Leu Leu Ala Gln His Pro Ile Ile  
 145 150 155 160  
 Pro Phe Tyr Pro Ile Val Lys Lys Asp Leu Thr Phe Ile His Leu Gly  
 165 170 175  
 Asn Asp Thr Arg Val Asp Gly Leu Val Asn Phe Glu Lys Leu Arg Met  
 180 185 190  
 Leu Ala Lys Glu Val Arg Leu Leu Thr His Met Cys Ser Ser Pro Tyr  
 195 200 205  
 Asp Leu Leu Ser Ile Leu Glu Leu Lys Gly Gln Ser Pro Ser Asn Ala  
 210 215 220  
 Leu Phe Ser Leu Asn Gln Met Ser Ala Ser Gln Ser Asn Ala Ala Ala  
 225 230 235 240  
 Gly Thr Val Ile Ala Ala Asn Ala Gly Gln Ala Thr Ile Lys Arg Arg  
 245 250 255  
 Lys Lys Ser Thr Ala Ala Pro Asn Pro Lys Lys Met Phe Glu Glu Ala  
 260 265 270  
 Gln Met Val Arg Arg Val Lys Ala Tyr Leu Asn Ser Leu Lys Ile Leu  
 275 280 285  
 Ser Asp Glu Asp Leu Leu His Lys Phe Ser Leu Glu Cys Glu Pro Ala  
 290 295 300  
 His Gly Ser  
 305

<210> 8  
 <211> 270  
 <212> PRT  
 <213> Homo sapiens

<400> 8  
 Ser Ala Glu Gly Leu Asp Leu Val Ser Ala Lys Asp Leu Ala Gly Gln  
 1 5 10 15  
 Leu Thr Asp His Asp Trp Ser Leu Phe Asn Ser Ile His Gln Val Glu  
 20 25 30  
 Leu Ile His Tyr Val Leu Gly Pro Gln His Leu Arg Asp Val Thr Thr  
 35 40 45

Ala Asn Leu Glu Arg Phe Met Arg Arg Phe Asn Glu Leu Gln Tyr Trp  
 50 55 60  
 Val Ala Thr Glu Leu Cys Leu Cys Pro Val Pro Gly Pro Arg Ala Gln  
 65 70 75 80  
 Leu Leu Arg Lys Phe Ile Lys Leu Ala Ala His Leu Lys Glu Gln Lys  
 85 90 95  
 Asn Leu Asn Ser Phe Phe Ala Val Met Phe Gly Leu Ser Asn Ser Ala  
 100 105 110  
 Ile Ser Arg Leu Ala His Thr Trp Glu Arg Leu Pro His Lys Val Arg  
 115 120 125  
 Lys Leu Tyr Ser Ala Leu Glu Arg Leu Leu Asp Pro Ser Trp Asn His  
 130 135 140  
 Arg Val Tyr Arg Leu Ala Leu Ala Lys Leu Ser Pro Pro Val Ile Pro  
 145 150 155 160  
 Phe Met Pro Leu Leu Leu Lys Asp Met Thr Phe Ile His Glu Gly Asn  
 165 170 175  
 His Thr Leu Val Glu Asn Leu Ile Asn Phe Glu Lys Met Arg Met Met  
 180 185 190  
 Ala Arg Ala Ala Arg Met Leu His His Cys Arg Ser His Asn Pro Val  
 195 200 205  
 Pro Leu Ser Pro Leu Arg Ser Arg Val Ser His Leu His Glu Asp Ser  
 210 215 220  
 Gln Val Ala Arg Ile Ser Thr Cys Ser Glu Gln Ser Leu Ser Thr Arg  
 225 230 235 240  
 Ser Pro Ala Ser Thr Trp Ala Tyr Val Gln Gln Leu Lys Val Ile Asp  
 245 250 255  
 Asn Gln Arg Glu Leu Ser Arg Leu Ser Arg Glu Leu Glu Pro  
 260 265 270

<210> 9  
 <211> 244  
 <212> PRT  
 <213> Mus musculus

<400> 9  
 Lys Ala Glu Cys Phe Glu Thr Leu Ser Ala Met Glu Leu Ala Glu Gln  
 1 5 10 15  
 Ile Thr Leu Leu Asp His Ile Val Phe Arg Ser Ile Pro Tyr Glu Glu  
 20 25 30  
 Phe Leu Gly Gln Gly Trp Met Lys Leu Asp Lys Asn Glu Arg Thr Pro

	35		40		45										
Tyr	Ile	Met	Lys	Thr	Ser	Gln	His	Phe	Asn	Glu	Met	Ser	Asn	Leu	Val
	50					55					60				
Ala	Ser	Gln	Ile	Met	Asn	Tyr	Ala	Asp	Ile	Ser	Ser	Arg	Pro	Asn	Ala
65					70					75					80
Ile	Glu	Lys	Trp	Val	Ala	Val	Ala	Asp	Ile	Cys	Arg	Cys	Leu	His	Asn
				85					90					95	
Tyr	Asn	Gly	Val	Leu	Glu	Ile	Thr	Ser	Ala	Leu	Asn	Arg	Ser	Pro	Ile
			100					105					110		
Tyr	Arg	Leu	Lys	Lys	Thr	Trp	Ala	Lys	Val	Ser	Lys	Gln	Thr	Lys	Ala
	115						120						125		
Leu	Met	Asp	Lys	Leu	Gln	Lys	Thr	Val	Ser	Ser	Glu	Gly	Arg	Phe	Lys
	130					135					140				
Asn	Leu	Arg	Glu	Thr	Leu	Lys	Asn	Cys	Asn	Pro	Pro	Ala	Val	Pro	Tyr
145					150					155					160
Leu	Gly	Met	Tyr	Leu	Thr	Asp	Leu	Ala	Phe	Ile	Glu	Glu	Gly	Thr	Pro
				165					170					175	
Asn	Phe	Thr	Glu	Glu	Gly	Leu	Val	Asn	Phe	Ser	Lys	Met	Arg	Met	Ile
			180					185					190		
Ser	His	Ile	Ile	Arg	Glu	Ile	Arg	Gln	Phe	Gln	Gln	Thr	Ala	Tyr	Arg
	195						200						205		
Ile	Asp	Gln	Gln	Pro	Lys	Val	Ile	Gln	Tyr	Leu	Leu	Asp	Lys	Ala	Leu
	210					215					220				
Val	Ile	Asp	Glu	Asp	Ser	Leu	Tyr	Glu	Leu	Ser	Leu	Lys	Ile	Glu	Pro
225					230					235					240

Arg Leu Pro Ala

<210> 10  
 <211> 249  
 <212> PRT  
 <213> Homo sapiens

<400> 10  
 Asp Glu Ile Thr Leu Leu Thr Leu His Pro Leu Glu Leu Ala Arg Gln  
 1 5 10 15  
 Leu Thr Leu Leu Glu Phe Glu Met Tyr Lys Asn Val Lys Pro Ser Glu  
 20 25 30  
 Leu Val Gly Ser Pro Trp Thr Lys Lys Asp Lys Glu Val Lys Ser Pro  
 35 40 45

Asn Leu Leu Lys Ile Met Lys His Thr Thr Asn Val Thr Arg Trp Ile  
 50 55 60  
 Glu Lys Ser Ile Thr Glu Ala Glu Asn Tyr Glu Glu Arg Leu Ala Ile  
 65 70 75 80  
 Met Gln Arg Ala Ile Glu Val Met Met Val Met Leu Glu Leu Asn Asn  
 85 90 95  
 Phe Asn Gly Ile Leu Ser Ile Val Ala Ala Met Gly Thr Ala Ser Val  
 100 105 110  
 Tyr Arg Leu Arg Trp Thr Phe Gln Gly Leu Pro Glu Arg Tyr Arg Lys  
 115 120 125  
 Phe Leu Glu Glu Cys Arg Glu Leu Ser Asp Asp His Leu Lys Lys Tyr  
 130 135 140  
 Gln Glu Arg Leu Arg Ser Ile Asn Pro Pro Cys Val Pro Phe Phe Gly  
 145 150 155 160  
 Arg Tyr Leu Thr Asn Ile Leu His Leu Glu Glu Gly Asn Pro Asp Leu  
 165 170 175  
 Leu Ala Asn Thr Glu Leu Ile Asn Phe Ser Lys Arg Arg Lys Val Ala  
 180 185 190  
 Glu Ile Ile Gly Glu Ile Gln Gln Tyr Gln Asn Gln Pro Tyr Cys Leu  
 195 200 205  
 Asn Glu Glu Ser Thr Ile Arg Gln Phe Phe Glu Gln Leu Asp Pro Phe  
 210 215 220  
 Asn Gly Leu Ser Asp Lys Gln Met Ser Asp Tyr Leu Tyr Asn Glu Ser  
 225 230 235 240  
 Leu Arg Ile Glu Pro Arg Gly Cys Lys  
 245

<210> 11  
 <211> 243  
 <212> PRT  
 <213> Homo sapiens

<400> 11  
 Val Ser Leu Leu Phe Asp His Leu Glu Pro Glu Glu Leu Ser Glu His  
 1 5 10 15  
 Leu Thr Tyr Leu Glu Phe Lys Ser Phe Arg Arg Ile Ser Phe Ser Asp  
 20 25 30  
 Tyr Gln Asn Tyr Leu Val Asn Ser Cys Val Lys Glu Asn Pro Thr Met  
 35 40 45

Glu Arg Ser Ile Ala Leu Cys Asn Gly Ile Ser Gln Trp Val Gln Leu  
     50                    55                    60  
 Met Val Leu Ser Arg Pro Thr Pro Gln Leu Arg Ala Glu Val Phe Ile  
     65                    70                    75                    80  
 Lys Phe Ile Gln Val Ala Gln Lys Leu His Gln Leu Gln Asn Phe Asn  
                     85                    90                    95  
 Thr Leu Met Ala Val Ile Gly Gly Leu Cys His Ser Ser Ile Ser Arg  
                     100                    105                    110  
 Leu Lys Glu Thr Ser Ser His Val Pro His Glu Ile Asn Lys Val Leu  
                     115                    120                    125  
 Gly Glu Met Thr Glu Leu Leu Ser Ser Ser Arg Asn Tyr Asp Asn Tyr  
     130                    135                    140  
 Arg Arg Ala Tyr Gly Glu Cys Thr Asp Phe Lys Ile Pro Ile Leu Gly  
     145                    150                    155                    160  
 Val His Leu Lys Asp Leu Ile Ser Leu Tyr Glu Ala Met Pro Asp Tyr  
                     165                    170                    175  
 Leu Glu Asp Gly Lys Val Asn Val His Lys Leu Leu Ala Leu Tyr Asn  
                     180                    185                    190  
 His Ile Ser Glu Leu Val Gln Leu Gln Glu Val Ala Pro Pro Leu Glu  
                     195                    200                    205  
 Ala Asn Lys Asp Leu Val His Leu Leu Thr Leu Ser Leu Asp Leu Tyr  
     210                    215                    220  
 Tyr Thr Glu Asp Glu Ile Tyr Glu Leu Ser Tyr Ala Arg Glu Pro Arg  
     225                    230                    235                    240  
 Asn His Arg

<210> 12

<211> 48

<212> PRT

<213> Unknown Organism

<220>

<223> Description of Unknown Organism: unavailable

<400> 12

Ile Arg Gly Gly Thr Lys Glu Ala Leu Ile Glu His Leu Thr Ser His  
     1                    5                    10                    15

Glu Leu Val Asp Ala Ala Phe Asn Val Thr Met Leu Ile Thr Phe Arg  
                     20                    25                    30

Ser Ile Leu Thr Thr Arg Glu Phe Phe Tyr Ala Leu Ile Tyr Arg Tyr

35

40

45

<210> 13  
 <211> 47  
 <212> PRT  
 <213> Mus musculus

<400> 13  
 Ile Lys Gly Gly Thr Val Val Lys Leu Ile Glu Arg Leu Thr Tyr His  
   1                  5                  10                  15  
 Met Tyr Ala Asp Pro Asn Phe Val Arg Thr Phe Leu Thr Tyr Arg Ser  
                   20                  25                  30  
 Phe Cys Lys Gln Glu Leu Leu Asn Leu Leu Ile Glu Arg Phe Glu  
           35                  40                  45

<210> 14  
 <211> 48  
 <212> PRT  
 <213> Mus musculus

<400> 14  
 Ile Arg Tyr Ala Ser Val Glu Ala Leu Leu Glu Arg Leu Thr Asp Leu  
   1                  5                  10                  15  
 Arg Phe Leu Ser Ile Asp Phe Leu Asn Thr Phe Leu His Thr Tyr Arg  
                   20                  25                  30  
 Ile Phe Thr Thr Ala Thr Val Val Leu Ala Lys Leu Ser Asp Ile Tyr  
           35                  40                  45

<210> 15  
 <211> 50  
 <212> PRT  
 <213> Unknown Organism

<220>  
 <223> Description of Unknown Organism: unavailable

<400> 15  
 Val Val Lys Phe Ala Ser Leu Asn Lys Leu Val Glu His Leu Thr His  
   1                  5                  10                  15  
 Asp Ser Lys His Asp Leu Gln Phe Leu Lys Thr Phe Leu Met Thr Tyr  
           20                  25                  30

Gln Ser Phe Cys Thr Pro Glu Lys Leu Met Ser Lys Leu Gln Gln Arg  
 35 40 45

Tyr Xaa  
 50

<210> 16  
 <211> 77  
 <212> PRT  
 <213> Drosophila melanogaster

<400> 16  
 Leu Thr Arg Ser Ser Arg Asp Glu Pro Leu Asn Phe Arg Ile Val Gly  
 1 5 10 15

Gly Tyr Glu Leu Arg Gly Val Ala Ile Ala Thr Gly Asn Ala Ala Val  
 20 25 30

Gly Ile Tyr Ile Ser His Val Glu Pro Gly Ser Lys Ala Gln Asp Val  
 35 40 45

Gly Leu Lys Arg Gly Asp Gln Ile His Glu Val Asn Gly Gln Ser Leu  
 50 55 60

Asp His Val Thr Ser Lys Arg Ala Leu Glu Ile Leu Thr  
 65 70 75

<210> 17  
 <211> 71  
 <212> PRT  
 <213> Homo sapiens

<400> 17  
 Asn Leu Lys Lys Asp Ala Lys Tyr Gly Leu Gly Phe Gln Ile Ile Gly  
 1 5 10 15

Gly Glu Lys Met Gly Arg Leu Asp Leu Gly Ile Phe Ile Ser Ser Val  
 20 25 30

Ala Pro Gly Gly Pro Ala Asp Leu Asp Gly Cys Leu Lys Pro Gly Asp  
 35 40 45

Arg Leu Ile Ser Val Asn Ser Val Ser Leu Glu Gly Val Ser His His  
 50 55 60

Ala Ala Ile Glu Ile Leu Gln  
 65 70

<210> 18  
 <211> 67  
 <212> PRT  
 <213> Homo sapiens

<400> 18  
 Ile Val Ile His Arg Gly Ser Thr Gly Leu Gly Phe Asn Ile Val Gly  
     1                    5                    10                    15  
 Gly Glu Asp Gly Glu Gly Ile Phe Ile Ser Phe Ile Leu Ala Gly Gly  
                     20                    25                    30  
 Pro Ala Asp Leu Ser Gly Glu Leu Arg Lys Gly Asp Gln Ile Leu Ser  
             35                    40                    45  
 Val Asn Gly Val Asp Leu Arg Asn Ala Ser His Glu Gln Ala Ala Ile  
     50                    55                    60  
 Ala Leu Lys  
     65

<210> 19  
 <211> 68  
 <212> PRT  
 <213> Rattus rattus

<400> 19  
 Val Glu Leu Pro Lys Thr Glu Glu Gly Leu Gly Phe Asn Ile Met Gly  
     1                    5                    10                    15  
 Gly Lys Glu Gln Asn Ser Pro Ile Tyr Ile Ser Arg Ile Ile Pro Gly  
                     20                    25                    30  
 Gly Ile Ala Asp Arg His Gly Gly Leu Lys Arg Gly Asp Gln Leu Leu  
             35                    40                    45  
 Ser Val Asn Gly Val Ser Val Glu Gly Glu His His Glu Lys Ala Val  
     50                    55                    60  
 Glu Leu Leu Lys  
     65

<210> 20  
 <211> 65  
 <212> PRT  
 <213> Homo sapiens

<400> 20  
 Val Lys Val Gln Lys Gly Ser Glu Pro Leu Gly Ile Ser Ile Val Ser  
     1                    5                    10                    15  
 Gly Glu Lys Gly Gly Ile Tyr Val Ser Lys Val Thr Val Gly Ser Ile  
                     20                    25                    30  
 Ala His Gln Ala Gly Leu Glu Tyr Gly Asp Gln Leu Leu Glu Phe Asn  
             35                    40                    45  
 Gly Ile Asn Leu Arg Ser Ala Thr Glu Gln Gln Ala Arg Leu Ile Ile  
     50                    55                    60



Gly  
65

<210> 21  
<211> 98  
<212> PRT  
<213> *Drosophila melanogaster*

<400> 21  
Met Val Phe Ala Val Val Asp Lys Ala Gly Thr Val Val Met Ser Asp  
1 5 10 15  
Gly Glu Glu Leu Asp Ser Trp Ser Val Leu Ile Asn Gly Ala Val Glu  
20 25 30  
Ile Glu His Ala Asn Gly Ser Arg Glu Glu Leu Gln Met Gly Asp Ser  
35 40 45  
Phe Gly Ile Leu Pro Thr Met Asp Lys Leu Tyr His Arg Gly Val Met  
50 55 60  
Arg Thr Lys Cys Asp Asp Cys Gln Phe Val Cys Ile Thr Gln Thr Asp  
65 70 75 80  
Tyr Tyr Arg Ile Gln His Gln Gly Glu Glu Asn Thr Arg Arg His Glu  
85 90 95  
Asp Glu

<210> 22  
<211> 99  
<212> PRT  
<213> *Homo sapiens*

<400> 22  
Leu Leu Phe Glu Pro His Ser Lys Ala Gly Thr Val Leu Phe Ser Gln  
1 5 10 15  
Gly Asp Lys Gly Thr Ser Trp Tyr Ile Ile Trp Lys Gly Ser Val Asn  
20 25 30  
Val Val Thr His Gly Lys Gly Leu Val Thr Thr Leu His Glu Gly Asp  
35 40 45  
Asp Phe Gly Gln Leu Ala Leu Val Asn Asp Ala Pro Arg Ala Ala Thr  
50 55 60  
Ile Ile Leu Arg Glu Asp Asn Cys His Phe Leu Arg Val Asp Lys Gln  
65 70 75 80  
Asp Phe Asn Arg Ile Ile Lys Asp Val Glu Ala Lys Thr Met Arg Leu  
85 90 95

Glu Glu His

<210> 23  
<211> 97  
<212> PRT  
<213> Homo sapiens

<400> 23  
Ala Met Phe Pro Val Thr His Ile Ala Gly Glu Thr Val Ile Gln Gln  
1 5 10 15  
Gly Asn Glu Gly Asp Asn Phe Tyr Val Val Asp Gln Gly Glu Val Asp  
20 25 30  
Val Tyr Val Asn Gly Glu Trp Val Thr Asn Ile Ser Glu Gly Gly Ser  
35 40 45  
Phe Gly Glu Leu Ala Leu Ile Tyr Gly Thr Pro Arg Ala Ala Thr Val  
50 55 60  
Lys Ala Lys Thr Asp Leu Lys Leu Trp Gly Ile Asp Arg Asp Ser Tyr  
65 70 75 80  
Arg Arg Ile Leu Met Gly Ser Thr Leu Arg Lys Arg Lys Met Tyr Glu  
85 90 95

Glu

<210> 24  
<211> 97  
<212> PRT  
<213> Homo sapiens

<400> 24  
Cys Met Tyr Gly Arg Asn Tyr Gln Gln Gly Ser Tyr Ile Ile Lys Gln  
1 5 10 15  
Gly Glu Pro Gly Asn His Ile Phe Val Leu Ala Glu Gly Arg Leu Glu  
20 25 30  
Val Phe Gln Gly Glu Lys Leu Leu Ser Ser Ile Pro Met Trp Thr Thr  
35 40 45  
Phe Gly Glu Leu Ala Ile Leu Tyr Asn Cys Thr Arg Thr Ala Ser Val  
50 55 60  
Lys Ala Ile Thr Asn Val Lys Thr Trp Ala Leu Asp Arg Glu Val Phe  
65 70 75 80  
Gln Asn Ile Met Arg Arg Thr Ala Gln Ala Arg Asp Glu Gln Tyr Arg  
85 90 95

Asn

<210> 25  
<211> 103  
<212> PRT  
<213> Mus musculus

<400> 25  
Arg Leu Arg Ser Val Val Tyr Leu Pro Asn Asp Tyr Val Cys Lys Lys  
1 5 10 15  
Gly Glu Ile Gly Arg Glu Met Tyr Ile Ile Gln Ala Gly Gln Val Gln  
20 25 30  
Val Leu Gly Gly Pro Asp Gly Lys Ser Val Leu Val Thr Leu Lys Ala  
35 40 45  
Gly Ser Val Phe Gly Glu Ile Ser Leu Leu Ala Val Gly Gly Gly Asn  
50 55 60  
Arg Arg Thr Ala Asn Val Val Ala His Gly Phe Thr Asn Leu Phe Ile  
65 70 75 80  
Leu Asp Lys Lys Asp Leu Asn Glu Ile Leu Val His Tyr Pro Glu Ser  
85 90 95  
Gln Lys Leu Leu Arg Lys Lys  
100

<210> 26  
<211> 91  
<212> PRT  
<213> Unknown Organism

<220>  
<223> Description of Unknown Organism: unavailable

<400> 26  
Arg Glu Asp Phe Glu Ile Ile Arg Val Phe Asp Gly Asn Asn Ser Tyr  
1 5 10 15  
Arg Ser Gln Ile Ser Arg Asn Ile Val Val Ala Lys His Val Ser Val  
20 25 30  
Gln Gln Val Arg Asp Ala Ala Leu Arg Arg Phe His Ile Asn Asp Thr  
35 40 45  
Pro Glu Arg Tyr Tyr Ile Thr Gln Val Val Gly Glu Val Glu Glu Glu  
50 55 60  
Ile Leu Glu Asp Pro Val Pro Leu Arg Asn Val Lys Arg Pro Glu Gly  
65 70 75 80

Lys Arg Ala Gln Ile Phe Ile Arg Tyr Tyr Asp  
85 90

<210> 27  
<211> 129  
<212> PRT  
<213> Unknown Organism

<220>  
<223> Description of Unknown Organism: unavailable

<400> 27  
Ser Ile Leu Val Thr Ser Gln Asp Lys Ala Pro Ser Val Ile Ser Arg  
1 5 10 15  
Val Leu Lys Lys Asn Asn Arg Asp Ser Ala Val Ala Ser Glu Tyr Glu  
20 25 30  
Leu Val Gln Leu Leu Pro Gly Glu Arg Glu Leu Thr Ile Pro Ala Ser  
35 40 45  
Ala Asn Val Phe Tyr Ala Met Asp Gly Ala Ser His Asp Phe Leu Leu  
50 55 60  
Arg His Gly Glu Gly Pro Leu Leu Leu His Leu Ala Ser Pro Val Ala  
65 70 75 80  
Arg Leu Pro Gln Glu Leu Leu Arg Val Arg Glu Glu Gly Ala Pro Phe  
85 90 95  
Pro Gly Ser Arg Pro Gln Gly Gly Arg Leu His Gly His Cys Ser Glu  
100 105 110  
Glu Glu Ala Pro Leu Ala Tyr Arg Ser His Gly Val His Thr Arg Cys  
115 120 125

Gly

<210> 28  
<211> 149  
<212> PRT  
<213> Mus musculus

<400> 28  
Gly Gly Lys Asp Val Ser Ala Glu Ala Glu Ser Ser Ser Met Val Pro  
1 5 10 15

Val Thr Thr Glu Glu Ala Lys Pro Val Pro Met Pro Ala His Ile Ala  
20 25 30

Val Thr Pro Ser Thr Thr Lys Gly Leu Ile Ala Arg Lys Glu Gly Arg  
35 40 45

Tyr Arg Glu Pro Pro Pro Thr Pro Pro Gly Tyr Val Gly Ile Pro Ile  
50 55 60

Ala Asp Phe Pro Glu Gly Pro Cys His Pro Ala Arg Lys Pro Pro Asp  
65 70 75 80

Tyr Asn Val Ala Leu Gln Arg Ser Arg Met Val Ala Arg Pro Thr Glu  
85 90 95

Ala Pro Ala Pro Gly Gln Thr Pro Pro Ala Ala Ala Ala Ser Arg Pro  
100 105 110

Gly Ser Lys Pro Gln Trp His Lys Pro Ser Asp Ala Asp Pro Arg Leu  
115 120 125

Ala Pro Phe Gln Ala Gly Phe Ala Gly Ala Glu Glu Asp Glu Asp Glu  
130 135 140

Gln Val Ser Ala Val  
145